LESS IS MORE: TEENAGER DIGITAL INFORMATION LITERACY AND PARENTAL RULES

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Abstract

Information literacy (IL) is the ability to locate, access, assess and use information from different sources, and represents a key dimension of digital and media literacy. Some recent studies indicate that IL is poorly developed among young people, and that educational institutions are not yet fully equipped to support its development. What strategies do young people enact when they search and select information online? How do they correlate with their personal characteristics? This paper presents the results of a survey-based study conducted in 2017 with 377 lower secondary school students in Northern Italy about their IL practices. The study focused on how students search for information online, what document formats they prefer, and the elements they rely on for assessing credibility. Such variables are analysed in relation with grade, gender, time online and the presence of parental rules for Internet use at home. The results indicate that while there are no or little significant differences across grades, gender and time spent online seem to matter, the presence of parental rules plays an important role: they affect not only the time spent online and the social setting in which the Internet is accessed, but also significantly correlate with more critical and effective online search and selection behaviours.

Keywords: Digital literacy, Information literacy, secondary school, credibility.

1 INTRODUCTION

1.1 Online information, credibility and us

Information is central in the life of a community: democracy in particular is based on the assumption that citizens together can make good choices, and this requires as complete and unbiased information as possible. Every decision, from elections to referendums, from volunteering to attending community meetings is based on the information we have available and that we consider trustworthy. In this sense, the media are “vital arteries through which the information which is our democratic life-blood flows” [1].

Today’s media-rich society is shaped by a complex information environment: the information space that newspapers and printed media shared with broadcast media (radio, TV, cinema), is being constantly redefined by digital media, from websites to social media [2][3]. In few decades, our information environment has changed from hierarchical to rhizomatic, from a structured and well-defined landscape with few trustworthy (or at least recognizable) sources, to an overcrowded environment, where anybody can publish through social channels, and where filter algorithms populate our feeds [4]. Along with the democratization of information and social media, the news environment has become fragmented, segmented, specialized and polarized [3]: access to an overwhelming amount of information makes it difficult to find the good bits, and to decide what to trust. Such increased complexity affected the whole system’s credibility. Wikileaks, the Russia Gate, Cambridge Analytica, are just some of the disruptive events that turned the term fake news into a buzzword, and that pushed both the people and the media system itself to question its own trustworthiness [5][6].

The study presented in this paper relies on the assumption that education plays a key role. No algorithm or law can eliminate fake news and warrant fair and well-balanced information for everyone [7]: a healthier and more sustainable information environment can only be generated by citizens with the right skills to locate, access, analyse, assess and share relevant and high quality information – in one word, citizens with adequate Digital Information Literacy (DIL) competences [8].
1.2 Digital information literacy

The term literacy is being used in many domains to describe a person's capability and skills to solve a certain type of problems as well as the motivational, volitional and social ability to make use of the obtained solutions in different but comparable settings [9]. The expression Information Literacy is credited to a 1974 report [10]. The rapid development of digital technologies in the following years prompted researchers and practitioners to revise and adapt their definitions and practices, focusing on one hand on the effectiveness/efficiency of search practices, and on the other on the importance of free and critical access to information for a democratic society [11][12][13]. The concept was associated with other literacies, including basic literacies (reading, writing, calculating), computer literacy and media literacy. The early 2000s saw the diffusion of ubiquitous Internet access, portable devices, and the rise of social media – which led to the emergence of the concept of Digital Media Literacy (DML).

Key frameworks for DML such as the European DigComp 2.1 [14], UK’s JISC model [15], the 5 resources model [16], or the White Book on Digital Media Literacy [17] include Information Literacy as a central dimension. The ICILS study also combined computer and information literacy as a unique construct [18]. Behrens [12], Johnston and Webber [19] provide a historical and conceptual discussion about Information Literacy.

The importance of DIL for active citizenship is emphasized by international declarations, like the Alexandria Proclamation [20], UNESCO’s White Paper [8] and the Paris agenda for Media and Information Literacy [21][22]. Moreover, recent studies suggest that DIL, as a key dimension of DML, positively correlates with critical thinking and with civic engagement [23].

At a pragmatic level, the national and international frameworks mentioned above provide a relatively stable and agreed-upon definition. In this study we will focus only on the abilities to find, assess and select online information.

1.3 Are we information literate?

While DIL has become a crucial part of modern school curricula [24], the literature reports a lack of competences among young people [25][26]. But where should we start? How do teenagers actually search information online? Does their familiarity with digital devices and online environments make it easy for them to find relevant and useful information? Indeed, hardly anything is known about how teenagers work their way towards desired information online and how their digital literacy can be measured [27].

Research indicates that in order to get information on current issues, young people prefer search engines, online encyclopaedias and news sites [28], as they want their sources to be up to date, verified and quickly providing an overview of the most important aspects. So-called digital natives are simply used to consider the Internet as a primary and immediate source of information, and share a culture of search [29], assuming Google’s popularity as a reliable indicator of truth or at least credibility. Recent research also suggests that young people seem to be developing new criteria for assessing information, e.g., the quality of online videos, [30]; or the number and nature of reader comments [31].

Hermida [32] showed that parents’ and teachers’ influence on children’s media literacy and skills is yet minimal, as they are mainly shaped by children’s personality and practices. Although peers often give advice on how to use the Internet, they lack critical advices [33]. International studies corroborate these finding, as experts agree that there is a gap in DIL skills for young people [25], but libraries and other centres, including schools, do not seem to be ready to tackle the challenge [34][35]. Young people rather ineffectively learn such central skills unattended and on their own [36].

Nonetheless, a recent study, based on the assumption that IL is critical for active citizenship [26], found that DIL skills at all ages are far from effective, especially with online media. At an international level, the ICILS study reached similar conclusions [37].

2 METHODOLOGY

In order to investigate the DIL practices of lower secondary school students (age 11-14; grades 6-8), we identified (a) a set of recognizable DIL practices, which we used as dependent variables; and (b) a set of personal and familiar characteristics, which we used as independent variables.
2.1 Basic and advanced DIL practices

The DIL practices considered in this study are related to three domains: (a) the overall approach to online navigation; (b) the selection of search engine results and (c) the criteria used to assess the credibility of a source. Each of them is considered as an indicator of a level of DIL competences (basic/advanced), based on how they are considered in Information Literacy tutorials (e.g., [38]), teaching professional articles (e.g., [39]) or learning units (such as https://newseumed.org/unit/believe-it-or-not/).

Practices related to the overall approach to online search are presented in Table 1, and were presented in the survey (see below) with the situation: “When you need some information about a specific topic of your interest (a videogame, a sport you never heard of, a new band), what do you do?”

<table>
<thead>
<tr>
<th>Practice</th>
<th>DIL level</th>
</tr>
</thead>
<tbody>
<tr>
<td>I go to a trustworthy website I know and I search there</td>
<td>Advanced</td>
</tr>
<tr>
<td>I follow notifications from my social media</td>
<td>Basic</td>
</tr>
<tr>
<td>I look up a word in Google and click on one of the first results</td>
<td>Basic</td>
</tr>
<tr>
<td>I look up a word in Google, skim 2 or 3 result pages, pick the best</td>
<td>Advanced</td>
</tr>
</tbody>
</table>

Practices related to the selection of result documents from search engines (Table 2) basically tried to test if the choice was made based on specific document informational features, or on the document format. They were presented in the situation: “You made an online search on a topic you are interested in, and you found 3 relevant pages: a video, a short text and a longer text. You do not have much time, so you can only view one of them. Which one do you pick?”

<table>
<thead>
<tr>
<th>Practice</th>
<th>DIL level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A video: it’s always better than reading</td>
<td>Basic</td>
</tr>
<tr>
<td>A document with a recent publication date</td>
<td>Advanced</td>
</tr>
<tr>
<td>A document with the name of its author</td>
<td>Advanced</td>
</tr>
<tr>
<td>The longer text: it will be more detailed</td>
<td>Basic</td>
</tr>
<tr>
<td>The shorter text: it will be more dense</td>
<td>Basic</td>
</tr>
<tr>
<td>A text with pictures: they help me understand</td>
<td>Advanced</td>
</tr>
</tbody>
</table>

Finally, criteria used to assess the credibility of a document (Table 3) were based on common Information Literacy guidelines [38]. These were introduced by the situation: “On a webpage you found a piece of information you had been looking for. How can you tell if what the page says is true?” The practices marked with (*) were introduced at a later stage, re-codifying the pupils’ answers for “other”.

Far from expressing an absolute value judgment, such classification in DIL levels is purely instrumental: the activation of actual information literacy competences in a specific situation means being able to pick and mix these practices according to the context. In some cases (e.g., when looking for the first meaning of a foreign word, or a specific currency rate exchange) a quick tour of the first three Google results might be enough; in other cases, social media might provide better information than search engines (e.g., when the question is “what’s the buzz?”). Nonetheless, specific practices still demonstrate a more critical stance; deciding what practices to use in specific situation would indicate an even higher degree of competence – and indeed some respondents used the “other” field in our survey exactly for this.
Table 3. Considered Digital Information Literacy practices: credibility criteria

<table>
<thead>
<tr>
<th>Practice</th>
<th>DIL level</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a picture or video confirms the information</td>
<td>Advanced</td>
</tr>
<tr>
<td>There is no way to know it</td>
<td>-</td>
</tr>
<tr>
<td>If I can see who the source/author is, and if I know they are trustworthy</td>
<td>High</td>
</tr>
<tr>
<td>If user comments agree with the text</td>
<td>Basic</td>
</tr>
<tr>
<td>If the text is well written and without mistakes</td>
<td>Advanced</td>
</tr>
<tr>
<td>If it’s online, usually it is true</td>
<td>Basic</td>
</tr>
<tr>
<td>I ask my parents or to other people I trust (*)</td>
<td>Advanced</td>
</tr>
<tr>
<td>I double-check on other websites (*)</td>
<td>Advanced</td>
</tr>
</tbody>
</table>

2.2 Five hypotheses

What personal and relational factors are related with the activation of the aforementioned online search practices? In this study we intended to test a few common assumptions.

1. Searching, assessing, analysing and integrating information are common school tasks in many disciplines, and online search is indeed a topic mentioned in many school programs [24]. We assumed that students would normally improve their DIL practices along their school curriculum, so that we expected older students to activate more advanced practices than younger ones.

2. Many studies suggest gender differences in digital competences [40], usually indicating that girls are more competent than boys, despite their lower self-assessment or self-efficacy. We expected that girls would demonstrate more advanced DIL practices.

3. While many studies provide evidence to counter such claim [41], it is common to think that teenagers who use the Internet more also develop more advanced competences. We expected that teenagers declaring most time spent online on a daily basis would demonstrate more advanced DIL practices.

4. Many parental guides (like SurfNetKids; https://www.surfnetkids.com/tech/337/tips-for-where-to-put-your-family-computer/) emphasize the importance of the social setting in which teenagers go online, i.e., if they share their online experience with adults or with peers. We expected that teenagers who go online under parents’ supervision (including simply using the Internet when in the same room as adults), or with peers would demonstrate more advanced DIL practices.

5. Finally, some studies, like [42][43], suggest that parental rules (or, more broadly, parental mediation) have an impact in teenagers’ digital literacy development. Others, on the other hand, seem to indicate that parents’ impact is rather limited [32][44]. We wanted to test this condition, and we formulated the hypothesis that the existence of parental rules would be correlated with the activation of more advanced DIL practices.

2.3 Data collection

This paper presents the results of a survey-based study conducted in 2017 over 377 secondary school students in Northern Italy (age 11-14, grades 6-8) about their DIL practices. The study participants came from 15 classes from 3 schools.

The sample is opportunistic and consequently not randomized. Three schools invited one of the authors for either a digital-awareness session, or for more extended digital literacy development projects. Before the session or the first project meeting, teachers invited their pupils to fill in a 10-minute online survey. Two classes completed the survey in October 2017, while the other did it between March and April 2018.

The survey instrument was organized in four sections:

1. Demographic data: sex, grade.
2. Internet use profile: average daily online time (self-assessment), social setting (alone/with others), most commonly used websites/apps, presence of parental rules, etc.

3. DIL practices, and proposed the micro-scenarios introduced above, asking to indicate the practices the respondent activated more often.

4. Open questions asking for (a) positive and negative experiences online; (b) specific topics that they would like to discuss in the session. These answers will not be considered in this paper.

2.4 Data analysis

The survey invitation was sent to a total of 438 pupils. The response rate was 88%, with a total of 385 responses, of which 377 valid and complete.

All complete and valid records were first compiled into a single dataset, in which DIL practices were coded and Internet use profile responses were used to segment the sample. A first rough analysis compared frequencies combining all dependent and independent variables.

This allowed the identification of possibly relevant relationships, which were then tested with contingency tables using Pearson Chi square. The Pearson Chi square test allows discovering if there is a significant relationship between two categorical variables, evaluating how likely it is that an observed difference between two variables is due to chance.

3 RESULTS

The results we obtained actually scaled down most of the hypotheses presented above. At the same time, they allowed to focus on specific correlations that open up interesting research and education perspectives.

3.1 Grade and the progressive increase in distrust

In general, we found no significant difference in DIL competences across grades. The groups from the three considered grades (6th, 7th, and 8th grade) share the same profile on all three dimensions (search mode, format, credibility). This is not encouraging, as it suggest that pupils do not develop information search and selection abilities during their school career.

Nonetheless, our data seem to suggest that younger students tend to attribute more credibility value to pictures than older ones. Also, a higher share of older students agree that “it’s not possible to say if something is true online” (22% in 8th grade against 12% in 6th grade and 18% in 7th grade). Such a difference is significant if we analyse 8th graders against 6th and 7th graders (p=0.03), and it is likely to reflect an increasing level of general distrust of the media system, as also reported in [5].

3.2 Gender, text and video

Analysing our sample across gender, against our expectations, only one significant difference emerged, namely, in the selection of results format. In fact, boys strongly prefer video (46.8%, girls 22.7%; p=.000) while girls indicate a preference for text in general (overall 64.2%), as illustrated in Figure 1.

3.3 Internet use profile: less is more

Contrary to a rather common expectation, teenagers who use the Internet more or more often do not demonstrate more advanced information literacy practices in a significant way. In particular, we found no evidence of more advanced credibility criteria in teenagers who reported a more intense Internet use profile.

This confirms the findings presented in [5], which suggest not only that more of digital devices use (in school, in that case) does not correlate with more skills, but also that there is some sort of “golden average”: students with better digital literacy skills are those that use it moderately.
3.4 Parental rules: less time online, more advanced criteria

The presence of parental rules seems to play an important role, actually more extended than we originally imagined.

In general about 70% of the participants indicate that they receive parental rules about the use of the Internet and digital devices in general; as it could be expected the proportion is higher for lower-grade students (82% in 6th grade, against 62% in 8th grade).

This can be explained with their younger age, which calls for more protection from the parents; but we could also imagine that in the last two years parents have become more aware of the risk their children might face online and more often give them rules.

According to our data, teenagers who receive rules from their parents spend significantly less time online (Figure 2), and also more often access the Internet in a setting where adults are present (21.3% against 4.4%; p=.001).
At the same time, teenagers with parental rules demonstrate significantly more advanced search behaviours when it comes to credibility criteria, as illustrated in Table 4. In particular, they more often indicate they control the author of a document, they ask somebody and double-check with other sources. On the other hand they assign significantly less credibility value to user comments. Interestingly, no significant difference was found in main search mode and search results selection.

Table 4. Parental rules and credibility criteria (p=.000)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>No parental rules</th>
<th>With parental rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a picture or video confirms the information</td>
<td>25.6%</td>
<td>31.3%</td>
</tr>
<tr>
<td>There is no way to know it</td>
<td>26.7%</td>
<td>15.5%</td>
</tr>
<tr>
<td>If I can see who the source/author is, and if I know they are trustworthy</td>
<td>12.2%</td>
<td>22.3%</td>
</tr>
<tr>
<td>If user comments agree with the text</td>
<td>25.6%</td>
<td>13.6%</td>
</tr>
<tr>
<td>If the text is well written and without mistakes</td>
<td>4.4%</td>
<td>3.0%</td>
</tr>
<tr>
<td>If it’s online, usually it is true</td>
<td>5.6%</td>
<td>2.3%</td>
</tr>
<tr>
<td>I ask my parents or to other people I trust (*)</td>
<td>0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>I double-check on other websites (*)</td>
<td>0%</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Teenagers without parental rules demonstrate less confidence in the system: 26.7% of them indicated that “there is no way to know if something is true online”, a sentence which only 15.5% of all teenagers with parental rules agreed upon.

Interestingly enough, all the participants who picked “other” (n=32; these items where then recoded) belong to the “with parental rules” group. All of them actually indicated a blend of more criteria, or specified conditions under which they would act in one way or another. This clearly indicates a higher degree of awareness and reflexivity.

4 CONCLUSIONS

In this paper we presented the results of a survey-based study about three domains of digital information literacy, in which a non-randomized sample of 385 lower secondary school students took part during the 2017/18 school year (valid responses N=377).

The results indicate specific differences related to grade (less parental control, higher distrust of the media system in general) and to gender (preference for videos for boys, and for text for girls), while the time spent online does not seem to have any significant impact. The presence of parental rules, on the other hand, seem to yield an impact: the presence of parental rules correlates with less time spent online, with a more socialized online experience with adults and with more advanced credibility criteria.

These results open up new and relevant questions for further research. In relation to grade-related differences, we might wonder if the rather small development we documented simply comes with age, or if education and schooling also plays a role. We expect in general that schools could have a larger impact than the one we expected, if they decided to invest on DIL development.

A more detailed analysis of parental rules would also be useful: what are parental rules about (time, content, apps, etc.)? Are they negotiated or imposed? How are they enforced? How are they perceived? How do such variables impact the development of digital literacy competences? We need more insights to learn how this can successfully happen: what rules work best, how can they be defined, or negotiated, or imposed, or enforced, etc., and how this fits within the broader concept and the different styles of parental mediation [45]. What the data suggest, however, is that also restrictive mediation might have a positive impact. Teenagers do not dislike rules – maybe even just to break them – and we adults cannot simply leave them on their own.

From a methodological point of view, this study has at least two weaknesses. First, it considers online search in general, while one might object that search practices vary across domains (leisure or school;
fashion or politics), or that competences are activated differently in different domains. Secondly, using a survey instrument means that we can only base our findings on what teenagers say about what they do online, which can be different from what they actually do. An in vivo or lab study that records actually online behaviours is likely to shed more light on the issues discussed here.

From an educational point of view, we believe that our results put in foreground the role of parents in the development of digital and media literacy. Most of the teenagers we surveyed (and with whom we worked in the following awareness sessions and digital literacy projects) seemed to welcome parental rules, and also to be happy to have an opportunity to share their digital experiences in class. Parents seem to naturally play a key role here, not as experts, but as adults that can “set the rules” – and these rules at the same time limit dangers and promote literacy. When rules are there, less time online matches better competences.

On the other hand, while schools include digital literacy in their programs, none of the participants indicated teachers as reference adults when it comes to what they experience online. In the light of our results, the collaboration between school and families seems not only positive, but necessary in order to promote the development of sound digital literacy competences.

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REFERENCES


